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LUMINARY Memo #91

To: Distribution
From: C. Schulenberg
Date: 7 July 1969
Subject: LUMINARY Revisions 100-105

Correction to LUMINARY Memo #85 - The quantity RADSKAL should have the following value: Decimal 25.583892 B-21 or octal 00000,06313.

Major Changes Incorporated into Revision 100

- 1) Anomaly LNY-66 was repaired by moving the following R02/R77 erasables to unshared memory: RTSTDEX, RTSTMAX, RTSTBASE, RTSTLOC, RSAMPDT, and RFAILCNT.
- 2) Anomalies LNY-61 and LNY-71 were repaired.
- 3) PCR 779 was implemented. (Leave track enable set when R29 is terminated)
- 4) Anomaly LNY-65 was repaired.
- 5) PCR 830 was implemented. (Supplementary ASTEER modifications)
- 6) PCR 776.2 was implemented. (Improved R2 Model Timing)
- 7) Anomaly LNY-72 was repaired.
- 8) Anomaly LNY-74 was repaired by moving the two erasables VEC1 and VEC2 to overlay KALCMANU storage.
- 9) Anomalies LNY-63 and LNY-64 were repaired.
- 10) Anomaly LNY-73 was repaired.
- 11) Anomaly LNY-62 was repaired.
- 12) Anomaly LNY-58 was repaired.

- 13) PCR 773.2 was implemented. (Fix constants for Planetary Inertial Orientation Subroutine)
- 14) Anomaly LNY-67 was repaired.

Major Changes Incorporated into Revision 101

- 1) An extensive modification was made to LUMINARY in this revision to provide a software fix to the "radar interface problem". This consists of a routine called C13STALL which is called by most programs that wish to write into channel 13 just prior to the write instruction. Some WRITE's into channel 13 were not protected in this manner since they could not possibly interfere with a radar-read. The stall routine will return control to the caller if it is permissible to execute the WRITE, WOR, or WAND instruction and otherwise stall the caller for up to about 6 ms until it is safe to perform the instruction.
- 2) The following erasables were created for the use of the new software described above: C13QSAV, C13FSAV, RADTIME, RADDEL, and C13FLWRD. These were placed in unswitched, unshared erasable memory. The first four erasables are all used internally, but the fifth, C13FLWRD, was created to act as a "switch". If C13FLWRD is set to oct 00000 the stall routine C13STALL is "shorted-out". Anything non-zero in C13FLWRD will cause the stall logic to be active. The following erasables were moved from unswitched, unshared memory into an overlay of the erasable RTARG in order to make room for the five erasables mentioned previously: ZERLINA, ELVIRA, AZINCR1, and ELINCR1.
- 3) PCR 823 was implemented. (Deletion of P31)
- 4) Anomaly LNY-69 was repaired.

Major Changes Incorporated into Revision 102

- 1) Luminary Assembly Control Board Request (ACB) L1 was implemented. This slight modification to R13 prevents an increase in computer execution time if the DAP is placed in the AUTO mode while P66 is in operation.
- 2) PCR 791.2 was implemented. (Do not allow a PROCEED response to a V21, V22, or V23)
- 3) PCR 797.2 was implemented. (Cause key release to blank DSKY if no display waiting)
- 4) PCR 802.2 was implemented. (Save alarm data after "Error Reset")
- 5) PCR 805 was implemented. (Don't allow V66 on the surface)
- 6) PCR 277 was implemented. (A fixed DUMPCNT) The erasable DUMPCNT was deleted as part of this PCR.
- 7) PCR 798.2 was implemented. (Reset GLOKFAIL in R00)
- 8) PCR 807.2 was implemented. (Add present time option to P21)
- 9) Luminary Assembly Control Board Request (ACB) L2 was implemented to prevent the possibility of taking the abnormal exit from the P63 ignition algorithm that is described in LUMINARY Memo #80.
- 10) The following programs were deleted: P38, P39, P78, and P79.
- 11) Anomaly LNY-76 was repaired.
- 12) The erasable C13FLWRD (just introduced in Rev. 101) was deleted. This makes the channel 13 stall logic completely self-contained.
- 13) The following flagbit was deleted since P38-P39, P78-P79 were the only users: P39/79SW.
- 14) DELTAR was removed from word 95 of the Rendezvous/Prethrust downlink list as part of the deletion of the SOR/SOM programs.

- 15) PCR 827 was implemented. (Add ZDOTD to Ascent/Descent downlist)
- 16) Anomaly LNY-77 was repaired.
- 17) Noun 57 was deleted as part of the deletion of the SOR/SOM programs.

Major Changes Incorporated into Revision 103

- 1) PCR 279 was implemented. (Variable insertion computation with capability to abort at any time. This PCR caused the following changes to the padloads for P70 and P71: ABTCOF through ABTCOF +15 and VMIN were deleted. These were replaced by the six padloads THETCRIT, RAMIN, J1PARM, K1PARM, J2PARM and K2PARM.)
- 2) As part of PCR 279 (see above) the following new flagbit was added: P7071FLG.

Major Changes Incorporated into Revision 104

- 1) PCR 814 was implemented. (Reduce keystrokes required to check and approve LR data)
- 2) PCR 801.2 was implemented. (Make BAILOUT alarms start with 3XXXX and POODOO alarms start with 2XXXX)

Major Changes Incorporated into Revision 105

Note: Revision 105 was made solely to create a good assembly and to correct program errors uncovered in revision 104.